



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,975	04/08/2002	Volker Reiffenrath	MERCK 2405	3306

23599 7590 09/07/2005

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

EXAMINER

WU, SHEAN CHIU

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,975

Applicant(s)

REIFFENRATH ET AL.

Examiner

Shean C. Wu

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-40 and 42-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-40 and 42-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Claim Rejections - 35 USC § 112

1. Claims 23, 34-35, 45 and 58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24 recites the broad recitation the nematic phase range (-30 to 90 =120) of the medium and Claims 34 and 35 also recite the range (90 and 100), which is the narrower statement of the range. Also, the claimed nematic phase from -20 to 80 in Claim 23 is out side range of Claim 24. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In Claim 45, the formula I-4 is not encompassed by formula I in Claim 24.

In Claim 58, the notation "A²" does not have an antecedent basis. The notation A² should be A¹.

Art Unit: 1756

2. Claims 24-40 and 41-60 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the liquid crystalline media having clearing point from 65-71.5⁰ C, does not reasonably provide enablement for clearing point higher than 80⁰ C. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. See the Examples M1-M27. There are no teachings in the specification to show one ordinary skilled in the art to prepare the liquid crystal mixtures having higher clearing point. Also, there is not guideline to teach how to make the compound having fluorinated phenyl ring at A¹ position.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 28 and 30-35 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 9-241,645.

The reference discloses a liquid crystal composition and display device, which composition comprises at least one component (A) selected from formula I-1 and formula I-2 and at least one component (B) selected from the formulae (II-1)-(II-8). The components A and B comprise 3-30 wt. % and 70-97 wt. %, respectively. The reference compositions have low threshold voltage, low viscosity, high dielectric anisotropy, wide range of the nematic liquid crystal phase and high holding ratio. See Examples 2-3, 7 and

Art Unit: 1756

9. The liquid crystal medium in Example 2 comprising HB(F)EB(F), HDB(F,F)-F, HHB(F,F)-F, HB(F,F)-F and HHBE (F,F)-F, which correspond to the compounds of the present formulae I, IX, II and VIII. In Example 7, liquid crystal medium comprising HB(F)EB(F) 12%, H₂HB(F,F)-F 11%, HHB(F,F)-F, 10%, HB(F,F)-F 12% and HH₂B(F,F)-F 6% and HHEB(F,F)-F 16%, which correspond to the compounds of the present formulae I, V, II, VIII. The medium of Example 7 (12% of I and 55% of II, V and VIII) has a wide range of the nematic phase (-20 to 83), low threshold voltage (1.29 V) and optical anisotropy (0.102) low viscosity (45.1 mPa.s=Cp=mm².s). The reference anticipates the claimed invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 23-27, 29, 36-40 and 42-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-241,645.

The reference teachings are previously set forth in section above. The reference differs from the claims in that the claimed medium has more specific concentration range (claim 39, 20-50% compounds of formula I in the medium and claim 47 having an additional compounds of RI-RVI) and liquid crystal properties.

Art Unit: 1756

With respect to Claim 24, the present claim has a nematic phase down to -30°C and clearing point above 90°C (-40°C to 100°C for Claim 25 and dielectric anisotropy ≥ 6 in Claim 26). The present Claim 36 has a nematic phase down to -30°C and clearing point above 80°C . The reference Example 7 has a range of the nematic phase (-20 to 83).

With respect to Claim 30, the TN threshold voltage $< 1.0\text{ V}$. The reference Example 2 has TN threshold voltage 1.01 V .

The Example 9 has an additional compound 3-HH-4, which corresponds to the present formula RI.

Because the reference medium comprises the present compounds (see the reference examples 2-3, 7 and 9), it would have been obvious to those skilled in the art to optimize the reference compounds according to their needs and applications (such as the range of nematic phase, threshold voltage, optical and dielectric anisotropy in TN, STN and AM-LCD devices) by adjusting the concentration of the disclosed compounds to arrive at the claimed invention.

7. Claims 23-40 and 42-59 are rejected under 35 U.S.C. 103(a) as obvious over Poetsch et al. (US 5,800,735).

The reference discloses novel and stable liquid-crystalline compounds, which are suitable as components of liquid-crystalline media and in particular simultaneously have relatively low viscosity and relatively high dielectric anisotropy (see formula I). The reference compounds represented by formula I (wherein X is halogenated alkyl and A is fluorinated phenyl) read on the present formula I (see col. 3, lines 43-47 for X and A is

Art Unit: 1756

mono or poly fluorinated phenyl ring). The reference formula I differs from the claimed compound in that the claimed compound has fluorinated phenyl ring connected to -COO. Although the present compounds are not exemplified by the reference, it would have been obvious to those skilled in the art to modify the Scheme 1 of the reference teaching by substituting mono or poly fluorinated phenyl ring for phenyl ring to arrive at the claimed invention. See col. 5 bridging col. 6. The reference further teaches that the reference compounds have broad mesophase range with low viscosity and high positive dielectric anisotropy (col. 1, lines 43-62). The Examples A and B comprise the present compounds of formulae II and IV. Other suitable compounds such as CCH and CCP for liquid-crystalline media are disclosed in Tables A and B. Also, see the liquid crystal properties of the examples, which are within the range of the claimed invention. If not, it would also be obvious one ordinary skilled in the art to modify and optimize the percentage of the reference compounds to obtain the claimed properties such as dielectric, optical anisotropy, viscosity and threshold voltage.

Response to Arguments

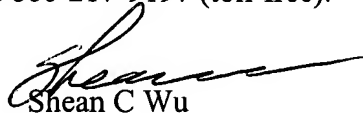
8. Applicant's arguments filed 6/24/05, with respect to the rejections of claims under obviousness-type double patenting have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of JP '645 and US '735. Also, see 112 1st and 2nd paragraph in sections 1 and 2 above.

Art Unit: 1756

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C. Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Shean C Wu
Primary Examiner
Art Unit 1756